

## EFFECTIVE CARBON PRICES

### COUNTRY NOTE ON GERMANY: High Costs in Electricity Generation

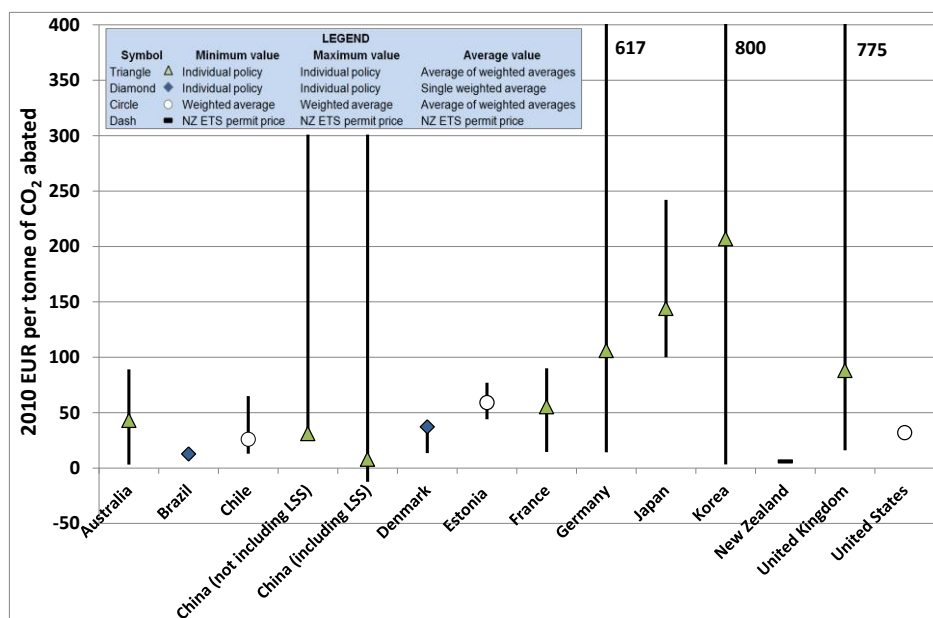
These country notes present a brief synthesis of the costs to society of reducing CO<sub>2</sub>eq emissions in selected countries. They are based on an examination of a broad range of policy instruments used in the electricity generation, road transport, pulp and paper, cement and household energy sectors.

The 2013 OECD report on *Effective Carbon Prices* found wide variations in the costs of abating each tonne of CO<sub>2</sub>eq within and among countries.<sup>1</sup> Effective carbon prices arise either explicitly via carbon taxes or emission trading systems, or implicitly via the abatement incentives embedded in other policies that influence greenhouse gas emissions. When interpreting the results, it is important to be aware that high effective carbon prices can stem from either ambitious policy or from ineffective policy. These case studies found that taxes and trading systems are generally more cost-effective than other policy instruments such as capital subsidies or feed-in tariffs.

The cost of abating greenhouse gas (GHG) emissions in Germany varies significantly among sectors, and is relatively high compared to that in other countries studied.

Abatement costs in the electricity generation sector are high, both per tonne of CO<sub>2</sub>eq abated (Figure 1), and when measured as total abatement costs in the sector compared to GDP. The cost of abating GHG emissions associated with the feed-in tariff system are quite high on average (in the order of EUR 100 per tonne of CO<sub>2</sub>eq abated). In particular, the effective carbon prices for the feed-in tariffs for photovoltaics (more than EUR 600 per tonne of CO<sub>2</sub>eq abated) are among the highest found in the electricity generation sector.<sup>2</sup>

**Figure 1. Estimated average effective carbon prices in the electricity sector, by country**

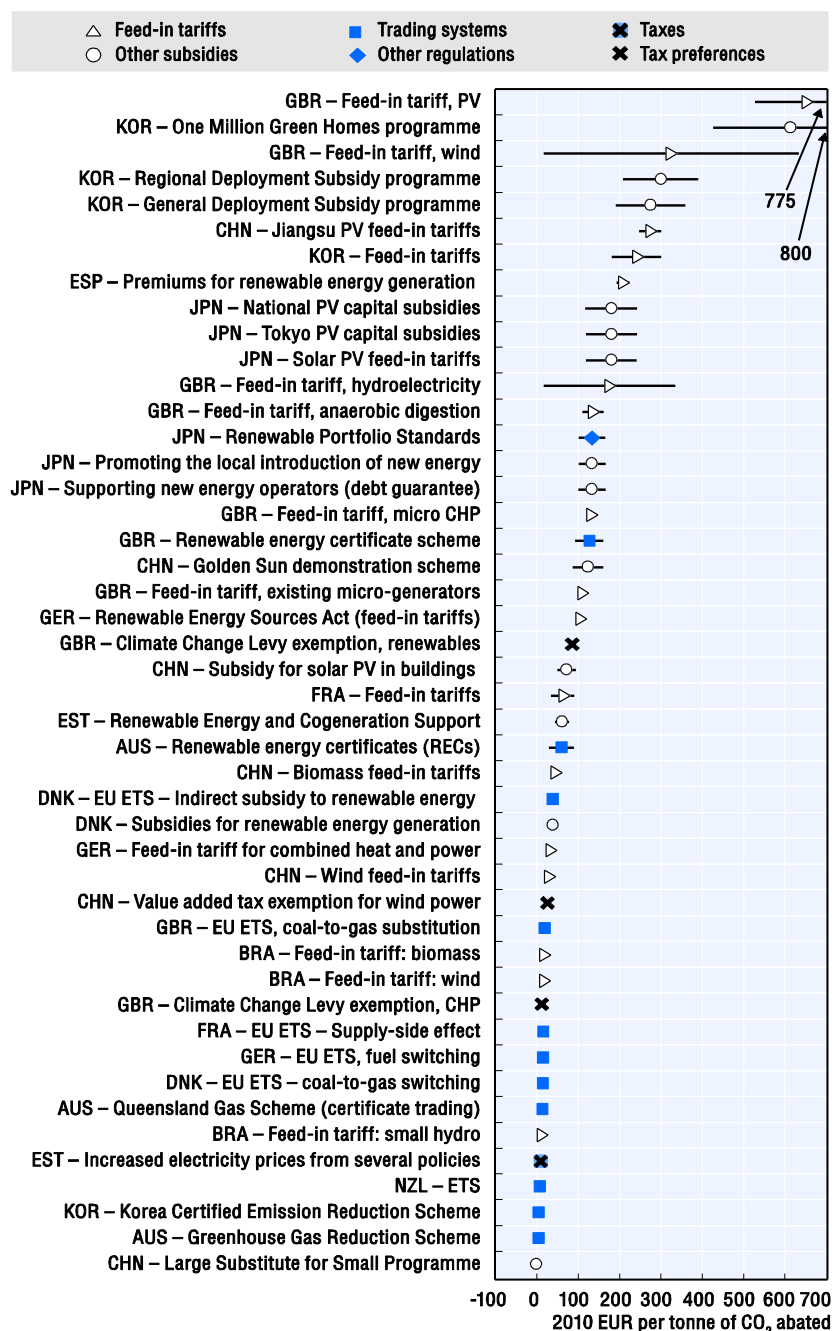


Note: The estimate for Estonia includes only supply-side abatement. For China, "LSS" refers to the "Large Substitute for Small" programme.

1. The countries covered in the book are Australia, Brazil, Chile, China, Denmark, Estonia, France, Germany, Japan, Korea, New Zealand, South Africa, Spain, United Kingdom and United States.
2. When estimating these costs, focus was on the changes in GHG emissions that the feed-in tariffs contribute to *within Germany*. As long as the total cap of the European Union's Emission Trading System for greenhouse gases is not modified, the feed-in tariffs do not affect total GHG emissions at the EU-wide level.

The total cost of the carbon-related policies applied in the electricity sector in Germany is the highest among the countries covered, representing 0.3% of GDP in 2010. This is largely due to the broad use of the feed-in tariffs and their high levels in Germany (Figure 2).

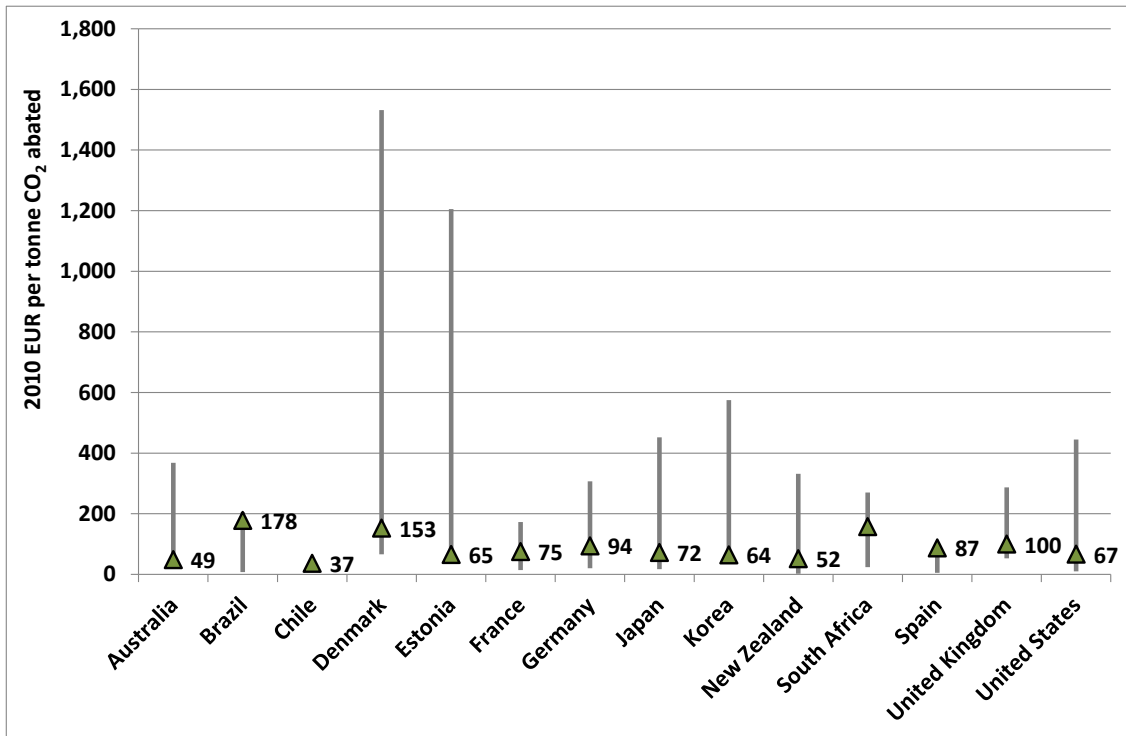
**Figure 2. Estimated average effective carbon prices in the electricity sector, by instrument type**



In road transport, the average effective carbon prices in Germany are not particularly high compared to what is found in other countries, although they are higher than in those countries with relatively low motor fuel taxes (Figure 3).<sup>3</sup> However, the tax exemptions and mandates for biofuels result in high abatement costs, about EUR 200-300 per tonne of CO<sub>2</sub>eq abated.

3. For fuel taxes, the costs to society are measured as the involuntary change in consumers' demand they entail – the tax payment per se is considered to be a transfer between parts of the economy, not a cost to society as such.

Figure 3. Estimated effective carbon prices in the road transport sector, by country



The effective carbon prices of the feed-in tariffs for biomass used in the pulp & paper sector in Germany are particularly high, some EUR 100-200 per tonne of CO<sub>2</sub>eq abated, resulting in the highest average effective carbon price for that sector among the countries covered. The other policy instruments applied in this sector, and in the cement sector, resulted in effective carbon prices that were much lower than in the electricity generation and road transport sectors, with an average cost EUR 22 and EUR 8 per tonne of CO<sub>2</sub>eq abated of in the pulp & paper and cement sectors, respectively (Figure 4).

Figure 4. Estimated effective carbon prices in the different sectors, by country

